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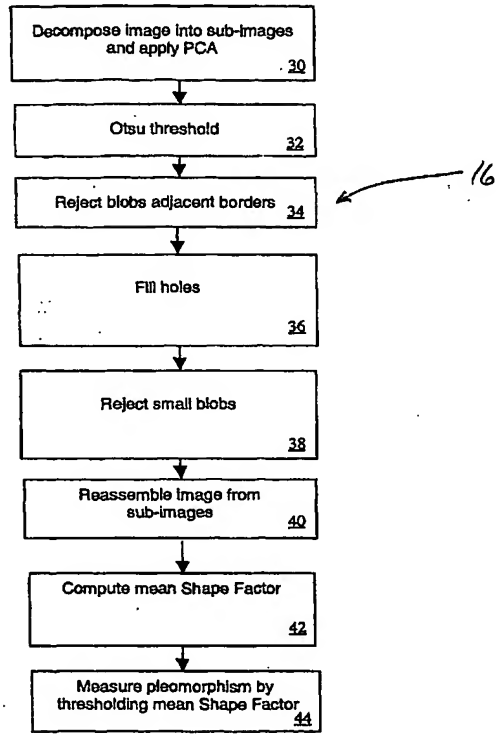
(54) Title: HISTOLOGICAL ASSESSMENT OF NUCLEAR PLEOMORPHISM



Nuclear Pleomorphism Feature Detection

(57) Abstract: A method of histological assessment of nuclear pleomorphism to identify potential cell nuclei divides image data into overlapping sub-images. It uses principal component analysis to derive monochromatic image data, followed by Otsu thresholding to produce a binary image. It removes image regions at sub-image boundaries, unsuitably small image regions and holes in relatively large image regions. It then reassembles the resulting sub-images into a single image. Perimeters (P) and areas (A) of image regions which are potential cell nuclei are determined and used in calculating nuclear shape factors P^2/A. Nuclear pleomorphism is assessed as relatively low, moderate or high according to whether predetermined shape factor thresholds indicate a mean cell nucleus shape factor for an image is relatively low, moderate or high.

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